

**NAVY TRAINING SYSTEM PLAN**  
**FOR THE**  
**COMBAT SURVIVOR EVADER LOCATOR**

**N88-NTSP-A-50-0018/I**

**AUGUST 2000**

## **COMBAT SURVIVOR EVADER LOCATOR**

### **EXECUTIVE SUMMARY**

The Combat Survivor Evader Locator (CSEL) is a communication system that will provide United States military forces with secure, two-way communication for personnel in a survival and evasion scenario. The CSEL will be capable of near real-time communications with a low probability of interception and detection. It will provide precise Global Positioning System based geoposition and navigation data, two-way Over-The-Horizon (OTH) secure data communication to Joint Search and Rescue Centers, OTH beacon operation, and Line-Of-Sight voice communication and beacon capabilities. This will enhance the Combat Search and Rescue response capabilities to locate and communicate with isolated personnel, independent of their location or circumstances. CSEL is currently in acquisition Phase II (Engineering and Manufacturing Development) of the Weapon System Acquisition Process. Milestone III will be reached in second quarter FY03.

Operational Assessment (OA) is scheduled to begin in second quarter FY01. OA will be conducted by the Air Force Operational Test and Evaluation Center and by the Navy Operational Test and Evaluation Force. Initial Operational Test and Evaluation is scheduled to begin in fourth quarter FY02.

It has not been decided which Navy rating and Marine Corps Military Occupational Specialty (MOS) will be tasked with loading and maintaining the CSEL Radio Set. One option is for Navy Aircrew Survival Equipmentmen and Marines with MOS 6060 working in the Aviation Life Support System (ALSS) Branch to perform these functions. The other option would give these responsibilities to Navy Aviation Electronics Technicians and Marines with MOS 63XX working in the Avionics Division. Based on a manpower analysis, either of the ratings or MOSs should be able to maintain the CSEL Radio Set without an increase in manpower; however, the ALSS Branch could more easily absorb the additional workload.

CSEL training will consist of several methods and mediums, and may include formal courses, Computer-Based Training, videos, and On-the-Job Training using CSEL equipment. Navy and Marine Corps aircrew and maintenance personnel will receive initial training and pre-deployment refresher training from Fleet Air Introduction Liaison Survival Aircrew Flight Equipment Tiger Teams and local Aeromedical Safety Officers. Follow-on training for aircrew personnel will be provided during basic flight training at the Aviation Survival Training Centers, and during Survival, Evasion, Resistance, and Escape training. Follow-on training for maintenance personnel can be accomplished by adding CSEL information to the existing Class A1 school for the appropriate rating and MOS.

**COMBAT SURVIVOR EVADER LOCATOR**

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**COMBAT SURVIVOR EVADER LOCATOR**

**LIST OF ACRONYMS**

ALSS	Aviation Life Support Systems
AMSO	Aeromedical Safety Officer
AMTCS	Aviation Maintenance Training Continuum System
ASTC	Aviation Survival Training Center
AT	Aviation Electronics Technician
BNA	Boeing North American
CBT	Computer-Based Training
CM	Corrective Maintenance
CMC	Commandant of the Marine Corps
CMS	Classified Material Storage
CNO	Chief of Naval Operations
COE	Common Operating Environment
COSPAS	Cosmicheskaya Systemya Poiska Avararihich Sudov
CPC	CSEL Planning Computer
CPE	CSEL Planning Equipment
CSEL	Combat Survivor Evader Locator
DII	Defense Information Infrastructure
FAILSAFE	Fleet Air Introduction Liaison Survival Aircrew Flight Equipment
GDN	Ground Dissemination Network
GPS	Global Positioning System
Hz	Hertz
IOT&E	Initial Operational Test & Evaluation
JSRC	Joint Search and Rescue Center
JTPT	Joint Training Planning Team
LOS	Line-Of-Sight
MATMEP	Maintenance Training Management and Evaluation Program
MOS	Military Occupational Specialty
MTBF	Mean Time Between Failure

**COMBAT SURVIVOR EVADER LOCATOR**

**LIST OF ACRONYMS**

MTIP	Maintenance Training Improvement Program
NA	Not Applicable
NAMP	Naval Aviation Maintenance Program
NFO	Naval Flight Officer
NSA	National Security Agency
NTSP	Navy Training System Plan
OA	Operational Assessment
OJT	On-the-Job Training
OPO	OPNAV Principal Official
OTH	Over-The-Horizon
PM	Preventive Maintenance
PR	Aircrew Survival Equipmentman
RFT	Ready For Training
RSA	Radio Set Adapter
S/E	Survivor/Evader
SAR	Search And Rescue
SARSAT	Search And Rescue Satellite Assisted Tracking
SERE	Survival, Evasion, Resistance, and Escape
TYCOM	Type Commander
UBS	UHF Base Station
UHF	Ultra-High Frequency
UHFSATCOM	Ultra-High Frequency Satellite Communications
USAF	United States Air Force
VAC	Volts Alternating Current

## **COMBAT SURVIVOR EVADER LOCATOR**

### **PREFACE**

This Initial Navy Training System Plan (NTSP) is an early look at the Combat Survivor Evader Locator (CSEL). It includes CSEL implementation concerns that will affect operational, maintenance, manpower, and training concepts that ultimately drive the manpower, personnel, and training system requirements to support the CSEL. This Initial NTSP is a product of the Training Planning Process Methodology as outlined in OPNAV Publication P-751-3-9-97.

## PART I - TECHNICAL PROGRAM DATA

### A. NOMENCLATURE-TITLE-PROGRAM

1. **Nomenclature-Title-Acronym.** Combat Survivor Evader Locator (CSEL)
2. **Program Elements.** 35176F and 65712F

### B. SECURITY CLASSIFICATION

1. **System Characteristics** ..... Unclassified
2. **Capabilities** ..... Unclassified
3. **Functions**..... Unclassified

### C. MANPOWER, PERSONNEL, AND TRAINING PRINCIPALS

OPNAV Principal Official (OPO) Program Sponsor..... CNO (N880G)

OPO Resource Sponsor ..... CNO (N880G)

Air Force Program Sponsor (Program Lead)..... SMC/CZ

Marine Corps Program Sponsor..... CMC (APW-71)

Developing Agency..... SPAWARSYSCOM (PMW/PMA187)  
NAVAIRSYSCOM (AIR 3.1.4)

Training Agency ..... CINCLANTFLT (N721)  
CINCPACFLT (N70)  
CNET (ETE-32)

Training Support Agency ..... NAVAIRSYSCOM (PMA205)

Manpower and Personnel Mission Sponsor ..... CNO (N12)  
BUPERS (PERS-4, PERS-404)

Director of Naval Training ..... CNO (N7)

Marine Corps Force Structure..... MCCDC (C53)

## **D. SYSTEM DESCRIPTION**

**1. Operational Uses.** The CSEL is a communication system that will provide United States military forces with secure, two-way communication for personnel in a Survivor/Evader (S/E) scenario. The CSEL will be capable of near real-time communications with a Low Probability of Interception and Low Probability of Detection. This will enhance the Combat Search and Rescue (SAR) response capabilities to locate and communicate with isolated personnel, independent of their location or circumstances.

This Initial NTSP focuses on the User Segment of the CSEL as it applies to Navy and Marine Corps combat aircrew usage. Although CSEL will be employed by Navy and Marine Corps Special Forces, this document does not address these users.

**2. Foreign Military Sales.** Future sales to North Atlantic Treaty Organization countries and allied nations are under consideration.

**E. DEVELOPMENTAL TEST AND OPERATIONAL TEST.** Operational Assessment (OA) is scheduled to begin in second quarter FY01. OA will be conducted by the Air Force Operational Test and Evaluation Center and by the Navy Operational Test and Evaluation Force. Initial Operational Test and Evaluation (IOT&E) is scheduled to begin in fourth quarter FY02.

**F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED.** In combat situations and possible S/E scenarios, the AN/PRQ-7 Radio Set will be employed instead of the AN/PRC-112B Radio Set currently used in the fleet.

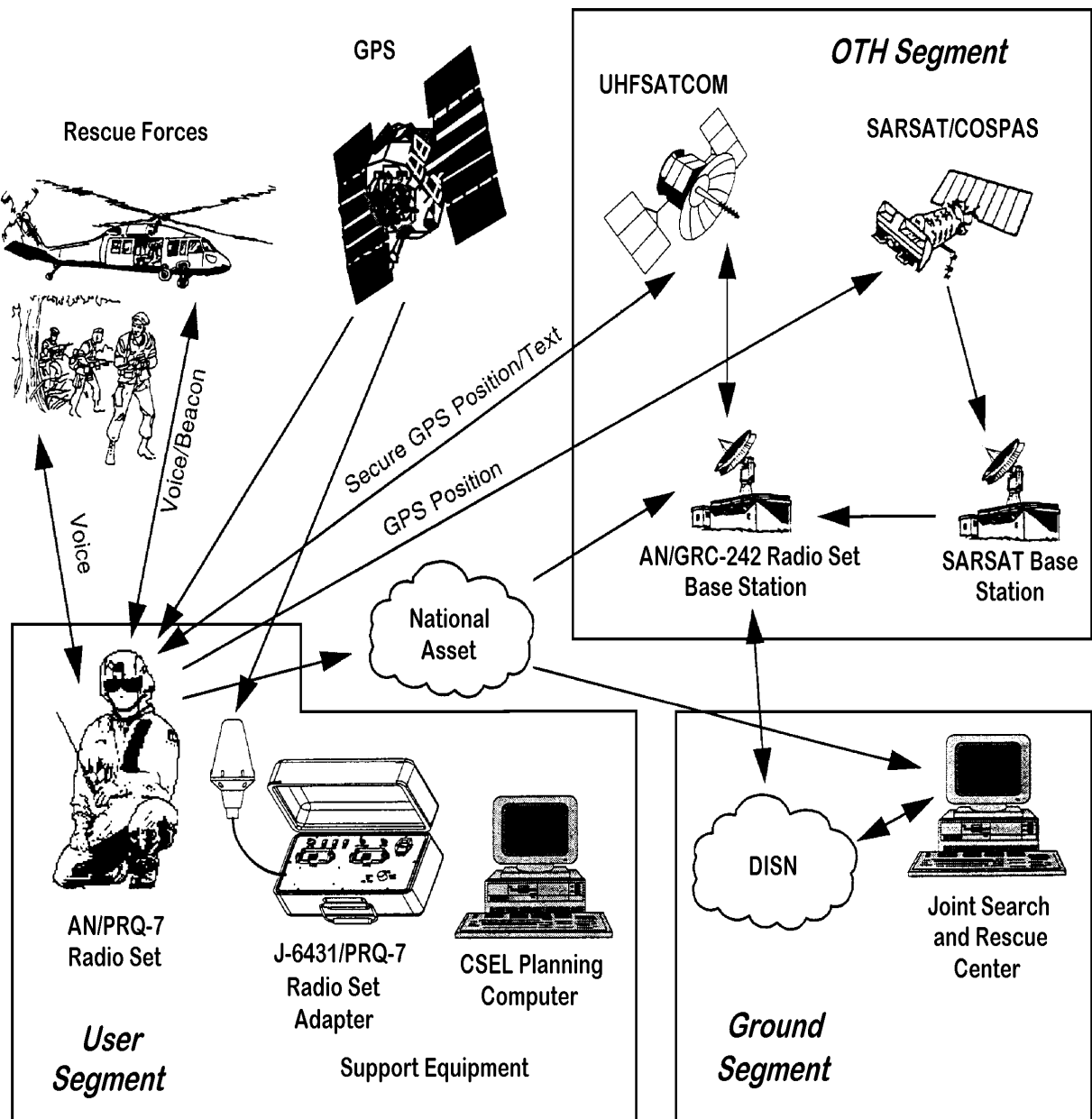
## **G. DESCRIPTION OF NEW DEVELOPMENT**

**1. Functional Description.** The CSEL system will provide global coverage with the following capabilities:

- Precision Global Positioning System (GPS) based geoposition and navigation data
- Two-way Over-The Horizon (OTH) secure data communication to a Joint Search and Rescue Center (JSRC)
- Line-Of-Sight (LOS) voice communication
- Selective Availability/Anti-Spoofing Module
- Built-in commercial growth

The CSEL system will consist of three segments as shown in Figure I-1: OTH, Ground, and User. (The User Segment directly applies to Navy and Marine Corps squadrons.) These segments are described in the sub-paragraphs following.





**Figure I-1. CSEL System Architecture**

**a. Over-The-Horizon Segment.** The OTH Segment will consist of the OTH Communication Systems and the AN/GRC-242 Radio Set Base Station that interconnects the OTH and Ground Segments. The AN/GRC-242 Radio Set Base Station is also called the Ultra-High Frequency (UHF) Base Station and will be referred to as such throughout this document. The OTH Communication System will relay critical information from isolated personnel to the appropriate JSRCs for decision-making and response planning. The OTH Communication System will operate over three systems: UHF Satellite Communications (UHFSATCOM), National Assets, and Search and Rescue Satellite Assisted Tracking (SARSAT). The UHF Base Station

(UBS) will be capable of two-way communication relays such as location, identification, and authentication information between the S/E and the Ground Segment.

**(1) Satellite Communication.** The UHFSATCOM mode will support two-way messaging, which includes geoposition information between a UBS and an S/E's AN/PRQ-7 Radio Set through an allocated UHFSATCOM channel. The National Assets will support one-way messaging, including geoposition information from the Radio Set using the Low Probability of Exploitation National Assets waveform. This supplements UHFSATCOM in areas of high intercept threat where National Assets coverage is likely to be provided. AN/PRQ-7 Radio Set National Assets transmissions are acknowledged by the JSRC via the UBS and UHFSATCOM satellite. The SARSAT operates over the international Cosmicheskaya Systemya Poiska Avararihih Sudov (COSPAS a.k.a. "Space System for the Detection of Vessels in Distress")-SARSAT satellite system and is intended for emergency coverage above 70° latitude where UHFSATCOM and National Assets coverage is marginal, as well as backup coverage through the civil SAR system.

**(2) AN/GRC-242 Radio Set Base Station.** The UBS will be capable of supporting two-way OTH data communication with as many as 200 CSEL Radio Sets in a Time Division Multiple Access protocol through the UHFSATCOM satellite system. Received messages are automatically relayed to the JSRCs through a Ground Dissemination Network (GDN). The UBS will also be capable of receiving messages transmitted via National Assets and the COSPAS-SARSAT satellite system, but will not be able to return messages via these two systems. The UBS will consist of two equipment consoles: one active unit and one backup unit on standby at all times. The two units will be identical and share a common antenna.

**b. Ground Segment.** The Ground Segment will be composed of JSRCs and the GDN that interconnects with the UBS. The Ground Segment functions will include CSEL data receipt, display, and dissemination capabilities in the JSRCs, and data receipt and processing to and from the UBS.

**(1) Joint Search and Rescue Centers.** JSRCs will be designated in operational theaters to coordinate the rescue operations for downed aircrew, isolated personnel, or other forces. A JSRC may be located at a fixed ground site, in a mobile unit, or aboard a ship. The CSEL System will establish primary and backup JSRCs. The primary JSRC will usually be in the user's operational theater and assume the primary responsibility for coordinating rescue or other operations. A backup JSRC will be assigned if operational situation warrants.

JSRCs are equipped with Defense Information Infrastructure (DII), Common Operating Environment (COE) work stations through which the CSEL application can operate simultaneously with other functions. In some cases, a JSRC workstation may be directly interfaced to Tactical Receive Equipment which provides direct access to the National Assets messages without having to wait for the UBS to retransmit the information over the GDN.

**(2) Ground Dissemination Network.** The GDN provides a highly reliable and timely global connection between all CSEL ground elements by utilizing the existing Defense Information System Network with DII COE compatible protocols.

**c. User Segment.** The User Segment consists of the AN/PRQ-7 Radio Set which is employed by combat aircrew personnel (as well as other military personnel) and the CSEL Planning Equipment (CPE). The CPE consists of the CSEL Planning Computer (CPC) used to load mission specific information into the Radio Sets prior to a mission, and the J-6431/PRQ-7 Radio Set Adapter (RSA) that provides the interface between the CPC, the GPS key fill device, and the Radio Sets.

**(1) AN/PRQ-7 Radio Set.** The Radio Set provides data communication for all OTH modes, SAR aircraft-compatible LOS voice communication, COSPAS-SARSAT 406-megahertz beacon, and precise geopositioning to the user. The Radio Set is designed for one-handed operation (right or left) with flight gloves or modified winter gloves. Once the Radio Set is activated, it may be polled by the JSRC workstation without further action.

## **(2) CSEL Planning Equipment**

**(a) J-6431/PRQ-7 Radio Set Adapter.** The RSA serves as the interface between the CPC and the reference Radio Set. With commands from the CPC, the RSA performs the following functions: loads mission parameters, provides post mission analysis, loads precision GPS time, and interfaces the Radio Set to the GPS key fill device. The RSA is portable, has a standard zero case design, and uses a universal AC power supply.

**(b) CSEL Planning Computer.** The CPC will host CSEL application software that allows an operator to control the operation of the RSA. The CPC and RSA will be used to load a target Radio Set with mission specific data including communications frequencies and channels, waypoints, standardized messages, Unit Identification Code, call signs, and passwords.

## **2. Physical Description**

**a. AN/GRC-242 Radio Set Base Station Console.** The UBS Console measures 84 inches high, 22.5 inches wide, 30 inches deep (42 inches with the keyboard extended), and weighs 300 pounds. It requires 115 Volts Alternating Current (VAC), 60 Hertz (Hz) at 20 amperes from two independent sources.

**b. AN/PRQ-7 Radio Set.** The Radio Set will be able to withstand saltwater immersion and the shock, vibration, and G-force associated with aircrew emergency egress and personnel recovery operations. The Radio Set will be designed to fit into all current survival vests and ejection seat packs. It will measure 7.8 inches high, 3.2 inches wide, and 1.6 inches deep, and weigh 31.8 ounces.

The Radio Set consists of earphone jack, speaker-microphone, keypad, volume control, push-to-talk button, Light Emitting Diode, and Liquid Crystal Display. The main power source of the Radio Set is a Lithium Sulfur Dioxide battery with a life expectancy of 19 days at 25° Celsius. Power saving features and operation above 25° Celsius will extend the life of the battery. The unit also contains a coin cell battery, which retains volatile memory during main battery replacement.

**c. J-6431/PRQ-7 Radio Set Adapter.** The RSA will be a suitcase unit that measures 10 inches high, 16 inches wide, 8 inches deep, and weighs less than 10 pounds. The RSA power requirements will be 115/240 VAC, 50/60 Hz at 1 ampere.

**d. CSEL Planning Computer.** The CPC will be a ruggedized IBM-compatible computer with the following minimum specifications: a processor speed of 100 MHz, 32 megabytes of RAM, a 100 megabyte hard disk drive, a 16X CD-ROM drive, a 3.5" floppy disk drive, two RS-232 serial ports that do not conflict with mouse operations, a VGA monitor, and a standard 101 keyboard. The CPC operating system will be Windows 95/98/NT.

**3. New Development Introduction.** The CSEL Radio Set, RSA, and UBS equipment, as well as CSEL software for the UBS, JSRC, and CPC, will be introduced into the fleet as new production items.

#### **4. Significant Interfaces**

**a. CSEL Systems.** The CSEL System will provide interfaces between the S/E, JSRCs, and several different satellite and communications systems for a variety of available communications capabilities including GPS, voice, and data link. The UBS will link UHFSATCOM, National Assets, and COSPAS-SARSAT systems to the JSRCs. In addition, the CSEL System will allow rescue forces to interface directly with the S/E using LOS communications.

**b. Communications Security.** The Radio Set will incorporate National Security Agency (NSA) approved Communications Security techniques to protect the unit against extraction of crypto keys. A NSA approved encryption algorithm will be used to protect UHFSATCOM and National Assets transmissions. A zeroizer feature will be included to permit the user to purge volatile memory. There will be two levels of zeroization available to the user. If the Radio Set is zeroized once, the user may continue to use the Radio Set; however, the JSRC operator will be alerted that the Radio Set may be in hostile hands and must re-authenticate the user's identification. If the Radio Set is zeroized a second time, the Radio Set will provide Amplitude Modulation voice communication on factory-set frequencies and course acquisition code GPS capabilities.

**5. New Features, Configurations, or Material.** The Radio Set will be designed for future growth to include a commercial L/S Band module and antenna for interfacing with commercial satellite communications systems.

## **H. CONCEPTS**

**1. Operational Concept.** At the squadron level, the CSEL operational concept will consist of two groups of personnel operating different CSEL equipment. Navy and Marine Corps aviators [i.e., Pilots, Naval Flight Officers (NFO), and enlisted Aircrew] will operate the Radio Set in an S/E situation. Navy and Marine Corps enlisted personnel will operate the CPE to load mission critical data into the Radio Set. It has not yet been determined which Navy rating and Military Occupational Specialty (MOS) will operate the CPE. The rating and MOS that are

selected to be CPE operators should also be responsible for all maintenance actions on the CPE and Radio Set.

## **2. Maintenance Concept**

**a. Organizational.** Organizational level maintenance will be performed by either Navy personnel in the Aviation Electronics Technician (AT) rating and Marine Corps personnel with MOS 63XX working in the Avionics Division; or by Navy personnel in the Aircrew Survival Equipmentman (PR) rating and Marine Corps personnel with MOS 6060 working in the Aviation Life Support Systems (ALSS) Branch.

**(1) AN/PRQ-7 Radio Set.** Preventive Maintenance (PM) is limited to performing self-test using Built-In Test. Corrective Maintenance (CM) is limited to replacing the main and backup batteries and possibly replacing the UHF/Very High Frequency antenna.

**(2) CSEL Planning Equipment.** PM is limited to operational checkout and periodic inspections and cleaning. CM includes troubleshooting to fault-isolate to a particular equipment item or cable and on-equipment repair by removal and replacement procedures.

**b. Intermediate.** Not Applicable (NA)

**c. Depot.** For the Radio Set and RSA, all maintenance beyond the organizational level will be accomplished by Boeing North American (BNA). The Radio Set will be under a ten-year warranty. The RSA will be covered by a maintenance agreement between the government and BNA.

**d. Interim Maintenance.** Currently, there is no plan for interim maintenance for the Radio Set and CPE. If interim maintenance requirements are determined later, it will be under the cognizance of the United States Air Force (USAF).

**e. Life Cycle Maintenance Plan.** NA

**3. Manning Concept.** At the squadron level, the manpower requirements for CSEL will consist of operators and maintainers. Operators of the Radio Set will include officer and enlisted Aircrew. The RSA and CPC will require enlisted operators and maintenance personnel. An analysis of the operation and maintenance functions associated with these CSEL components indicates these tasks are within the capabilities of existing Navy Officer Billet Code, Navy Enlisted Occupational Standards (ratings), and Marine Corps MOS structures.

**a. Estimated Mean Time Between Failure.** The Mean Time Between Failure (MTBF) for the Radio Set is expected to be 3000 hours. The MTBF for the RSA and CPC has not been determined.

**b. Proposed Utilization.** The AN/PRQ-7 Radio Set will be used by downed aircrew members during S/E situations.

**c. Recommended Qualitative and Quantitative Manpower Requirements**

**(1) Aircrew.** Aircrew manpower requirements are determined by the seat factor and crew ratios listed in the appropriate Required Operational Capability and Projected Operational Environment documents. Since CSEL will not impact these factors, current aircrew requirements will not change as a result of the introduction of CSEL.

**(2) Maintenance.** Operation and maintenance of the CPE and Radio Set will be performed by either ATs and Marine Corps personnel with MOS 63XX, or by PRs and Marine Corps personnel with MOS 6060. There are several factors that impact final determination of both quality and quantity of manpower for CSEL including: the type of data to be loaded into the Radio Set, the technical skills required to operate the CPE and to load the Radio Set, storage requirements for the CPC, and the amount of time needed to load each Radio Set and to perform required maintenance.

The data to be loaded into the Radio Set is obtained from the Operations Department and Avionics Division, and includes communication frequencies, waypoints, call signs, GPS keys, and user information. Since some of this data is classified, personnel tasked to load the Radio Set will require a Secret security clearance. Personnel are screened for clearance eligibility prior to obtaining an avionics rating or MOS. However, personnel are not screened prior to obtaining the PR rating or MOS 6060; therefore, it is expected that not all technicians in the ALSS Branch will be eligible for a clearance.

The procedure for loading the Radio Set involves connecting the CPC and GPS key fill device to the RSA, installing a reference Radio Set into the RSA, and installing the target Radio Set into the RSA. The technician must also obtain a GPS fix using the reference Radio Set and manually enter data into the CPC. A Supportability Evaluation conducted in October 1999 indicated that with proper training, personnel holding either rating and either MOS should be equally adept at performing these tasks.

Since the CPC will be used to load classified data it will require a secure storage area when not in the possession of the loading technician. Most Avionics Divisions have personnel designated as Classified Material Storage (CMS) custodians and have access to a safe or vault. ALSS personnel, if issued security clearances, could also be designated as CMS custodians. Since there is no way to extract classified data from the loaded Radio Sets, it is permissible to store them in the survival vests.

It takes approximately eleven minutes to set up the CPE and load one Radio Set. Each successive Radio Set takes approximately two to three minutes. The total man-hours expended on a daily basis loading Radio Sets will vary for each type of squadron, depending on the number of crewmembers and the flight schedule. Based on a manpower analysis, existing manning levels for either rating and either MOS should be adequate; however, the ALSS Branch could more easily absorb the additional workload.

**4. Training Concept.** A Joint Training Planning Team (JTPT) has been established to ensure that all military services provide consistent CSEL training. However, the JTPT will not dictate how each service should train their personnel. The Navy and Marine Corps CSEL training concept covered in this Initial NTSP will consist of initial and follow-on training for CSEL users

and maintenance personnel. CSEL training will consist of several methods and mediums and may include formal courses, On-the-Job Training (OJT) using CSEL equipment, videos, and Computer-Based Training (CBT).

The CSEL training concept will be similar to other ALSS equipment in that pilots, NFOs, and enlisted aircrew will need to become familiar with the Radio Set as soon and as often as possible. This familiarization will be in the form of Radio Set training at basic pilot and NFO schools, at the Aviation Survival Training Centers (ASTC), and during Survival, Evasion, Resistance, and Escape (SERE) training.

**a. Initial Training.** CSEL initial training will be provided for personnel participating in OA and IOT&E. Other personnel requiring CSEL initial training will include Aeromedical Safety Officers (AMSO), Fleet Air Introduction Liaison Survival Aircrew Flight Equipment (FAILSAFE) personnel, and Naval Air Maintenance Training Group instructors.

**Title ..... CSEL Operation and Familiarization**

Description ..... This course provides training to the NFO and enlisted Aircrewman, including:

- CSEL capabilities, limitations, and operation
- Radio Set functions and operation

Upon completion, the student will be able to employ the CSEL system during S/E situations.

Location ..... Test site

Length ..... 2 days

RFT date ..... Currently available

TTE/TD ..... CSEL Equipment

**Title ..... CSEL Radio Set Loading and Maintenance**

Description ..... This course provides training to the organizational level technician, including:

- CPC setup and operation
- RSA setup and operation
- Radio Set loading and maintenance procedures

Upon completion, the student will be able to properly configure the CPC and RSA, load the Radio Set with mission data, and perform the required maintenance actions in a squadron environment under limited supervision.

Location ..... Test site

Length ..... 2 days

RFT date ..... Currently available

TTE/TD ..... CSEL Equipment

The FAILSAFE Tiger Teams will develop training packages consisting of videos and CBT to support the introduction of CSEL. This training will include Radio Set operation, CPE operation and maintenance, and Radio Set loading and maintenance. The Tiger Teams will provide this training to Fleet squadrons as they receive their CSEL assets, to the ASTCs for follow-on physiology training, and to the activities providing SERE training.

#### **b. Follow-on Training**

**(1) Aircrew.** Navy and Marine Corps Aircrew will receive instruction on the functions and proper use of the Radio Set at basic Pilot and NFO schools, at the ASTCs, and during SERE training. Refresher training will be provided by FAILSAFE personnel or by local AMSOs prior to deployments.

**(2) Maintenance.** CSEL information may be added to either C-100-2018 Avionics Technician O-Level Class A1, or C-602-2035 Aircrew Survival Equipmentman Common Core Class A1, depending on which rating and MOS is tasked with loading and maintaining the Radio Set. This will be a minor revision and is not expected to increase the current course length. Refresher training will be provided by FAILSAFE personnel or by local AMSOs prior to deployments.

#### **c. Student Profiles**

<b>SKILL IDENTIFIER</b>	<b>PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS</b>
AT	° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O-Level Class A1
PR	° C-602-2035, Aircrew Survival Equipmentman Common Core Class A1
MOS 6060	° C-602-2035, Aircrew Survival Equipmentman Common Core Class A1
MOS 63XX	° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O-Level Class A1

**d. Training Pipelines.** No new training pipelines will be established to support the introduction of CSEL.



## **I. ONBOARD (IN-SERVICE) TRAINING**

**1. Proficiency or Other Training Organic to the New Development.** Aircrew will receive Radio Set proficiency training from FAILSAFE personnel or local AMSOs prior to deployment. All aircrew members will also receive Radio Set training during refresher aviation physiology training at ASTCs as prescribed.

**a. Maintenance Training Improvement Program.** The Maintenance Training Improvement Program (MTIP) is used to establish an effective and efficient training system responsive to fleet training requirements. MTIP is a training management tool that, through diagnostic testing, identifies individual training deficiencies at the organizational and intermediate levels of maintenance. MTIP is the comprehensive testing of one's knowledge. It consists of a bank of test questions managed through automated data processing. The Deputy Chief of Staff for Training assisted in development of MTIP by providing those question banks (software) already developed by the Navy. MTIP was implemented per Naval Aviation Maintenance Program (NAMP) Instruction, OPNAVINST 4790.2G. MTIP allows increased effectiveness in the application of training resources through identification of skills and knowledge deficiencies at the activity, work center, or individual technician level. Refresher training is concentrated where needed to improve identified skill and knowledge shortfalls. MTIP will be replaced by the Aviation Maintenance Training Continuum System (AMTCS). Current planning is for AMTCS to begin full implementation for fleet deployment on 1 October 2000.

COMNAVAIRPAC has discontinued using MTIP. They are currently using maintenance data products as a source to determine maintenance training deficiencies until AMTCS is implemented.

**b. Aviation Maintenance Training Continuum System.** AMTCS will provide career path training to the Sailor or Marine from their initial service entry to the end of their military career. AMTCS is planned to be an integrated system that will satisfy the training and administrative requirements of both the individual and the organization. The benefits will be manifested in the increased effectiveness of the technicians and the increased efficiencies of the management of the training business process. By capitalizing on technological advances and integrating systems and processes where appropriate, the right amount of training can be provided at the right time, thus meeting the CNO's mandated "just-in-time" training approach.

Technology investments enable the development of several state-of-the-art training and administrative tools: CBT for the technicians in the Fleet in the form of Interactive Courseware with Computer-Managed Instruction and Computer-Aided Instruction for the schoolhouse.

Included in the AMTCS development effort is the AMTCS Software Module which provides testing (Test and Evaluation), recording (Electronic Training Jacket), and a Feedback system. The core functionality of these AMTCS tools are based and designed around the actual maintenance-related tasks the technicians perform, and the tasks are stored and maintained in a Master Task List data bank. These tools are procured and fielded with appropriate commercial off-the-shelf hardware and software, i.e., Fleet Training Devices -

Laptops, Personal Computers, Electronic Classrooms, Learning Resource Centers, operating software, and network software and hardware.

Upon receipt of direction from OPNAV (N889H), AMTCS is to be implemented and the new tools integrated into the daily training environment of all participating aviation activities and supporting elements. AMTCS will serve as the standard training system for aviation maintenance training within the Navy and Marine Corps, and is planned to supersede the existing MTIP and Maintenance Training Management and Evaluation Program (MATMEP).

**2. Personnel Qualification Standards.** Personnel Qualifications Standards have not yet been determined.

**3. Other Onboard or In-Service Training Packages.** CSEL information will be integrated into existing OJT packages. Each Navy and Marine Corps squadron has an OJT program that has been tailored to their operational requirements.

Marine Corps onboard training is based on the current series of MCO P4790.12, Individual Training Standards System and MATMEP. This program is designed to meet Marine Corps, as well as NAMP maintenance training requirements. It is a performance-based, standardized, level-progressive, documentable, training management and evaluation program. It identifies and prioritizes task inventories by MOS through a front-end analysis process that identifies task, skill, and knowledge requirements of each MOS. MTIP questions coupled to MATMEP tasks will help identify training deficiencies that can be enhanced with refresher training. AMTCS will replace MATMEP approximately FY02.

## **J. LOGISTICS SUPPORT**

### **1. Manufacturer and Contract Numbers**

<b>CONTRACT NUMBER</b>	<b>MANUFACTURER</b>	<b>ADDRESS</b>
F04701-96-C-0020 (USAF)	Autonetics and Missile Systems Division, Boeing North American	3370 Miraloma Avenue Post Office Box 3105 Anaheim, CA 92803-3105

**2. Program Documentation.** The GPS Integrated Logistics Support Plan for CSEL dated May 1998 is currently being updated.

**3. Technical Data Plan.** The following documents are currently available addressing various technical aspects of the CSEL system.

- AN/PRQ-7 Radio Set Operator's Manual..... NAVAIR 16-30PRQ7-1
- AN/PRQ-7 Radio Set Operator's Check List... NAVAIR 16-30-PRQ7-1CL

- AN/GRC-242 UHF Base Station..... EE 150-WG-OMI-010
- CPE Operations and Maintenance ..... NAVAIR 16-35CSEL-CPE-1
- JSRC Software..... EE 130-TA-OMI-010

**4. Test Sets, Tools, and Test Equipment. NA**

**5. Repair Parts.** Actual procurement of government spares and repair parts are initiated in accordance with the Supply Support Management Plan. The contractor will furnish the Naval Inventory Control Point in Philadelphia, Pennsylvania, spares and repair parts usage data. The Material Support Date will be established in October 2004.

**6. Human Systems Integration.** The displays, controls, and work areas of the CSEL communications system are designed such that system functions and procedures allocated to system operators are at acceptable levels of workload and fatigue. Operation of the Radio Set is possible with a minimal expenditure of energy. It has optimized automatic features to facilitate one-handed operation by users that may be partially incapacitated.

**K. SCHEDULES**

**1. Installation and Delivery Schedules.** A total of 9,028 Radio Sets, 618 RSAs, and 618 CPCs will be procured by the Navy. The following schedule depicts the planned procurement of CSEL equipment for the Navy and Marine Corps.

**CSEL PROCUREMENT SCHEDULE**

<b>EQUIPMENT</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03</b>	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>
Radio Set	200	255	2260	2585	2708	1020
RSA	28	17	151	173	181	68
CPC	28	17	151	173	181	68

The CSEL procurement quantities shown in the above table will not provide CSEL capabilities to every Navy and Marine Corps Aircrew member. As a result, Type Commanders (TYCOM) will determine which squadrons will employ CSEL and which squadrons will use the AN/PRC-112B Radio.

**2. Ready For Operational Use Schedule.** The Ready For Operational Use Schedule has not been determined. The TYCOMs will determine which squadrons will deploy with CSEL assets. Initial Operational Capability is expected to be reached in fourth quarter FY02.

**3. Time Required to Install at Operational Sites. NA**

**4. Foreign Military Sales and Other Source Delivery Schedule.** Delivery schedules for other United States Military Forces are available through the CSEL Program Office.

**5. Training Device and Technical Training Equipment Delivery Schedule.** CSEL user assets will be required for training at the various schools, ASTCs, and by AMSOs and Tiger Teams. Since it is not currently feasible to train with the Radio Set using the actual UHFSATCOM, UBS, and JSRCs, consideration should be given to developing a simulator that provides the Radio Set user with realistic communication capabilities.

**L. GOVERNMENT-FURNISHED EQUIPMENT AND CONTRACTOR-FURNISHED EQUIPMENT TRAINING REQUIREMENTS. NA**

**M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS**

<b>DOCUMENT OR NTSP TITLE</b>	<b>DOCUMENT OR NTSP NUMBER</b>	<b>PDA CODE</b>	<b>STATUS</b>
Operational Requirements Document	019-92-I-A	HQ ACC/XRSR	Approved 25 Oct 96
AN/GRC-242 Radio Set Base Station NTSP	N6-NTSP-E-70-9902	PMW/PMA187	Approved Oct 99
Aviation Life Support System (ALSS) NTSP	N88-NTSP A-50- 9206A/D	PMA202	Draft Dec 99

## APPENDIX A - POINTS OF CONTACT

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